

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 7 is requested to be cancelled.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-4, 6, 8-13, 15-20, and 22-23 are now pending in this application.

Rejections Under 35 U.S.C. § 103

In the Office Action, Claims 1-3, 6-8, 10, 13, and 15-20 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,482,740 (Soininen et al.) in view of U.S. Patent No. 6,399,496 (Edelstein et al.) and U.S. Patent 6,749,689 (Bögel et al.). Claims 4 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Soininen et al., Edelstein et al., and Bögel et al., as applied to claim 1 above, and further in view of U.S. Patent No. 6,440,849 (Merchant et al.). Claims 9 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Soininen et al., Edelstein et al., and Bögel et al., as applied to claims 1 and 6 above, and further in view of U.S. Patent No. 6,380,083 (Gross). Claims 11-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Soininen et al., Edelstein et al., and Bögel et al., as applied to claim 10 above, and further in view of U.S. Patent No. 6,090,710 (Andricacos et al.). Applicants traverse all of these rejections.

To establish a prima facie case of obviousness based on a combination of prior art references under 35 U.S.C. § 103(a), the Examiner must first show that there is a suggestion or motivation to combine the teachings of those references. This may come in the form of some objective teaching in the prior art or, alternatively, knowledge generally available to one of ordinary skill in the art at the time of the invention that would lead that individual to combine the relevant teachings of the references. When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the Examiner to explain why the combination of the teachings is proper. Ex parte Skinner, 2 U.S.P.Q.2d 1788 (Bd. Pat. App. & Inter. 1986).

In the present case, there are several reasons why there is no showing of a motivation or suggestion to one of ordinary skill in the art to combine the teachings of Soininen et al., Edelstein et al., and Bögel et al. First, in support of the obviousness rejection, the Examiner states that combining the teachings of the references would, "...provide a stable Cu alloy with improved electromigration properties." (Office Action page 3.) However, the Examiner's statement is merely stating an alleged result of the combination and not a motive for the combination.

Second, as discussed in previous responses by Applicants, Edelstein et al. describes the use of "seed layers." The section referred to by the Examiner – Col. 8, lines 35-52 – states that these seed layers are used to "improve the adhesion properties relative to pure copper." (Col. 8, lines 36-37.) Nothing is taught in this section about increasing grain size. Applicants respectfully submit that the Examiner's statement on page 3 that "Edelstein et al. teach a copper alloy material including at least one element for increasing grain size" is not correct.

Third, the section of Bögel et al. cited by the Examiner – Col. 7, lines 65-67 – merely shows graphically the effect of solution annealing time and temperature on recrystallization and grain growth for a copper alloy having 0.40% chromium. Nothing is taught in Bögel et al. about increasing in grain size due to chromium. Indeed, Bögel et al. does not suggest changes in grain growth due to an element like chromium, rather Bögel et al. describes change in grain growth due to annealing time and temperature. Applicants respectfully submit that the Examiner's statement on page 3 that "Bögel et al. teach that Calcium (Ca) or Chromium (Cr) increases the grain size having one atomic percent or less" is not correct.

In summary, the Examiner has not provided a motivation for the combination, only the alleged result of the combination. Moreover, Bögel et al. and Edelstein et al. do not provide the teachings missing in Soininen et al.. Grain size is not mentioned in Edelstein et al. and grain size in Bögel et al. is changed not by a particular element but by annealing time and temperature. As such, there is no motivation or suggestion to combine Bögel et al. and Edelstein et al. with Soininen et al. to obtain Applicants' claimed invention.

For at least the foregoing reasons, Applicants respectfully request withdrawal of the rejections based on the combination of the above-mentioned references.

More specifically, the rejection of Claims 1-3, 6-8, 10, 13, and 15-20 under 35 U.S.C. § 103(a) should be withdrawn because there is no motivation or suggestion to combine Soininen et al., Edelstein et al., and Bögel et al.. These references also do not teach all of the limitations of the rejected claims. For these same reasons, the rejection of Claims 4 and 22 based on Soininen et al., Edelstein et al., and Bögel et al. and further in view of Merchant et al. should be withdrawn. The rejection of Claims 9 and 23 based on Soininen et al., Edelstein et al., and Bögel et al. and further in view of Gross should be withdrawn. The rejection of Claims 11-12 based on Soininen et al., Edelstein et al., and Bögel et al. and further in view of Andricacos et al. should be withdrawn.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

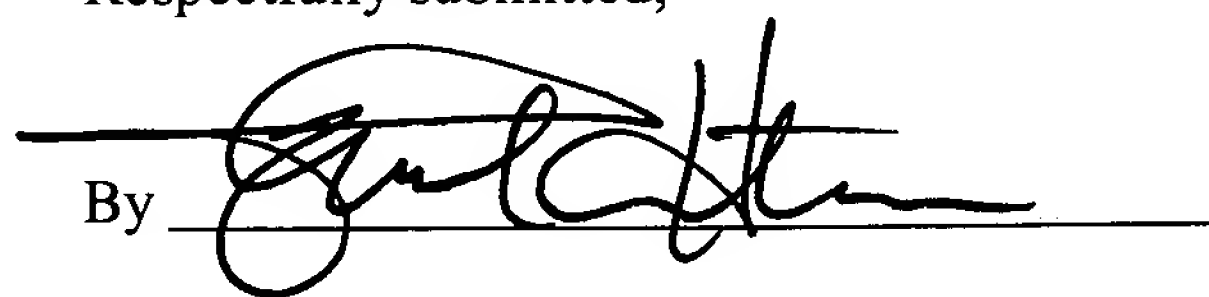
The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2350. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2350. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-2350.

Respectfully submitted,

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By



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